

Practitioner's Docket No. MSU 4.1-541

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Muraleedharan G. Nair, Haibo Wang Gale M. Strasburg,  
Alden M. Booren and James I. Gray  
Application No.: 09 / 761,143 Group No.: 1651  
Filed: 2001 January 16 Examiner: Patricia A. Patten  
For: **METHOD FOR INHIBITING CYCLOOXYGENASE AND INFLAMMATION**  
**USING CYANIDIN**

Commissioner for Patents  
Washington, D.C. 20231

RECEIVED

JUL 17 2003

TRANSMITTAL OF APPEAL BRIEF  
(PATENT APPLICATION—37 C.F.R. § 1.192)

TECH CENTER 1600/2900

NOTE: The phrase "the date on which" an "appeal was taken" in 35 U.S.C. 154(b)(1)(A)(ii) (which provides an adjustment of patent term if there is a delay on the part of the Office to respond within 4 months after an "appeal was taken") means the date on which an appeal brief under § 1.192 (and not a notice of appeal) was filed. Compliance with § 1.192 requires that: 1. the appeal brief fee (§ 1.17(c)) be paid (§ 1.192(a)); and 2. the appeal brief complies with § 1.192(c)(1) through (c)(9). See Notice of September 18, 2000, 65 Fed. Reg. 56366, 56385-56387 (Comment 38).

1. Transmitted herewith, in triplicate, is the APPEAL BRIEF in this application, with respect to the Notice of Appeal filed on May 29, 2003

NOTE: "Appellant must, within two months from the date of the notice of appeal under § 1.191 or within the time allowed for reply to the action from which the appeal was taken, if such time is later, file a brief in triplicate. . . ." 37 C.F.R. § 1.192(a) (emphasis added).

**CERTIFICATION UNDER 37 C.F.R. §§ 1.8(a) and 1.10\***

(When using Express Mail, the Express Mail label number is mandatory;  
Express Mail certification is optional.)

I hereby certify that, on the date shown below, this correspondence is being:

**MAILING**

☒ deposited with the United States Postal Service in an envelope addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231

**37 C.F.R. § 1.8(a)**

**37 C.F.R. § 1.10 \***

☒ with sufficient postage as first class mail.

☐ as "Express Mail Post Office to Addressee"

Mailing Label No. \_\_\_\_\_ (mandatory)

**TRANSMISSION**

☐ facsimile transmitted to the Patent and Trademark Office, (703) \_\_\_\_\_

Tammi L. Taylor

Signature

Date: 7/11/2003

Tammi L. Taylor

(type or print name of person certifying)

\* Only the date of filing (§ 1.6) will be the date used in a patent term adjustment calculation, although the date on any certificate of mailing or transmission under § 1.8 continues to be taken into account in determining timeliness. See § 1.703(f). Consider "Express Mail Post Office to Addressee" (§ 1.10) or facsimile transmission (§ 1.6(d)) for the reply to be accorded the earliest possible filing date for patent term adjustment calculations.

(Transmittal of Appeal Brief [9-6.1]—page 1 of 4)

## 2. STATUS OF APPLICANT

This application is on behalf of

☒ other than a small entity.

☐ a small entity.

A statement:

☐ is attached.

☐ was already filed.

## 3. FEE FOR FILING APPEAL BRIEF

Pursuant to 37 C.F.R. § 1.17(c), the fee for filing the Appeal Brief is:

☐ small entity \$160.00

☒ other than a small entity \$320.00

Appeal Brief fee due \$ 320

## 4. EXTENSION OF TERM

*NOTE: 37 C.F.R. § 1.704(b) "...an applicant shall be deemed to have failed to engage in reasonable efforts to conclude processing or examination of an application for the cumulative total of any periods of time in excess of three months that are taken to reply to any notice or action by the Office making any rejection, objection, argument, or other request, measuring such three-month period from the date the notice or action was mailed or given to the applicant, in which case the period of adjustment set forth in § 1.703 shall be reduced by the number of days, if any, beginning on the day after the date that is three months after the date of mailing or transmission of the Office communication notifying the applicant of the rejection, objection, argument, or other request and ending on the date the reply was filed. The period, or shortened statutory period, for reply that is set in the Office action or notice has no effect on the three-month period set forth in this paragraph."*

*NOTE: The time periods set forth in 37 C.F.R. § 1.192(a) are subject to the provision of § 1.136 for patent applications. 37 C.F.R. § 1.191(d). See also Notice of November 5, 1985 (1060 O.G. 27).*

*NOTE: As the two-month period set in § 1.192(a) for filing an appeal brief is not subject to the six-month maximum period specified in 35 U.S.C. § 133, the period for filing an appeal brief may be extended up to seven months. 62 Fed. Reg. 53,131, at 53,156; 1203 O.G. 63, at 84 (Oct. 10, 1997).*

The proceedings herein are for a patent application and the provisions of 37 C.F.R. § 1.136 apply.

(complete (a) or (b), as applicable)

- (a) ☐ Applicant petitions for an extension of time under 37 C.F.R. § 1.136 (fees: 37 C.F.R. § 1.17(a)(1)-(5)) for the total number of months checked below:

Extension (months)	Fee for other than small entity	Fee for small entity
<input type="checkbox"/> one month	\$ 110.00	\$ 55.00
<input type="checkbox"/> two months	\$ 410.00	\$ 205.00
<input type="checkbox"/> three months	\$ 930.00	\$ 465.00
<input type="checkbox"/> four months	\$ 1,450.00	\$ 725.00
<input type="checkbox"/> five months	\$ 1,970.00	\$ 985.00

Fee: \$ \_\_\_\_\_

If an additional extension of time is required, please consider this a petition therefor.

(check and complete the next item, if applicable)

- ☐ An extension for \_\_\_\_\_ months has already been secured, and the fee paid therefor of \$ \_\_\_\_\_ is deducted from the total fee due for the total months of extension now requested.

Extension fee due with this request \$ \_\_\_\_\_

or

- (b) ☒ Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time:

5. TOTAL FEE DUE

The total fee due is:

Appeal brief fee \$ 320

Extension fee (if any) \$ -0-

TOTAL FEE DUE \$ 320

6. FEE PAYMENT

- ☒ Attached is a ☒ check ☐ money order in the amount of \$ 320
- ☐ Authorization is hereby made to charge the amount of \$ \_\_\_\_\_
- ☐ to Deposit Account No. \_\_\_\_\_
- ☐ to Credit card as shown on the attached credit card information authorization form PTO-2038.

**WARNING:** Credit card information should not be included on this form as it may become public.

- ☒ Charge any additional fees required by this paper or credit any overpayment in the ~~manner authorized above.~~ to Deposit Account 13-0610

A duplicate of this paper is attached.

7. FEE DEFICIENCY

**NOTE:** If there is a fee deficiency and there is no authorization to charge an account, additional fees are necessary to cover the additional time consumed in making up the original deficiency. If the maximum six-month period has expired before the deficiency is noted and corrected, the application is held abandoned. In those instances where authorization to charge is included, processing delays are encountered in returning the papers to the PTO Finance Branch in order to apply these charges prior to action on the cases. Authorization to change the deposit account for any fee deficiency should be checked. See the Notice of April 7, 1986, 1065 O.G. 31-33.

- ☒ If any additional extension and/or fee is required,

AND/OR

- ☒ If any additional fee for claims is required, charge:
- ☒ Deposit Account No. 13-0610
- ☐ Credit card as shown on the attached credit card information authorization form PTO-2038.

**WARNING:** Credit card information should not be included on this form as it may become public.

Date: July 11, 2003

Reg. No.: 20,931

Customer No.: 21036

  
SIGNATURE OF PRACTITIONER

Ian C. McLeod  
(type or print name of practitioner)

2190 Commons Parkway  
P.O. Address

Okemos, Michigan 48864

RECEIVED

JUL 17 2003

TECH CENTER 1600/2900



MSU 4.1-541  
Appl. No. 09/761,143  
July 11, 2003  
Appeal Brief

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Muraleedharan G. Nair, Haibo Wang, Gale M. Strasburg, Alden M. Booren, and James I. Gray

Serial No.: 09/761,143 Group Art Unit: 1651

Filed : 2001 January 16

For : METHOD FOR INHIBITING CYCLOOXYGENASE AND INFLAMMATION USING CYANIDIN

Examiner : Patricia A. Patten

Mail Stop Appeal Brief - Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**APPEAL BRIEF UNDER 37 C.F.R. § 1.192**

Sir:

This is an appeal from a final rejection in the above entitled application. The claims on appeal are set forth as Appendix A. An oral hearing will be requested. Enclosed are three (3) copies of this Brief and the fee due upon filing of the Brief.

(1) Real Party in Interest

The real party in interest is the Board of Trustees operating Michigan State University, East Lansing, Michigan, a constitutional corporation of the State of Michigan, which is the assignee of the above entitled application.

MSU 4.1-541  
Appl. No. 09/761,143  
June 25, 2003  
Appeal Brief

(2) Related Appeals and Interferences

Attached is Appendix B which shows in a chart the related applications.

The instant Application Serial No. 09/761,143 on appeal is a continuation of Application Serial No. 09/337,313 ('313), filed June 21, 1999. The '313 application issued as U.S. Patent No. 6,194,469 ('469) and claims a method of inhibiting cyclooxygenase and inflammation using cherry bioflavonoids.

Application Serial No. 09/749,856 ('856), filed December 28, 2000, is a divisional application of the '469 patent. The '856 application issued as U.S. Patent No. 6,576,271 ('271). The '271 patent relates to a method of inhibiting cyclooxygenase and inflammation using cherry bioflavonoids.

The '469 patent is a continuation-in-part of Application Serial No. 09/317,310 ('310), filed May 24, 1999. The '310 application issued as U.S. Patent No. 6,423,365 ('365). The '365 patent claims a method of inhibiting cyclooxygenase and inflammation using cherry bioflavonoids.

Application Serial No. 09/383,324 ('324), filed August 26, 1999, is a another continuation-in-part of the '310 application. The '324 application claims a

MSU 4.1-541  
Appl. No. 09/761,143  
June 25, 2003  
Appeal Brief

method for producing compositions and nutraceutical compositions having antioxidant and anti-inflammatory activity from an edible berry. The '324 application is on appeal.

Application Serial No. 09/678,587 ('587), filed October 3, 2000, is a divisional application of the '324 application. The '587 application claims a method and compositions having antioxidant and anti-inflammatory activity from an edible berry. The '587 application is on appeal.

Another continuation-in-part of the '310 application is Application Serial No. 09/342,076 ('076), filed June 28, 1999. The '076 application was abandoned.

Application Serial No. 09/662,747 ('747), filed September 15, 2000, is a continuation of the '076 application. The '747 application relates to a method for providing nutraceutical and phytoceutical benefits to mammals using cherry anthocyanins, bioflavonoids, and phenolics. The '747 application has been allowed.

The '310 application claims priority to U.S. Provisional Patent Application No. 60/120,178 ('178), filed February 16, 1999, and U.S. Provisional Patent Application No. 60/111,945 ('945), filed December 11,

1998.

Application Serial No. 09/329,604 ('604), filed June 10, 1999, claims priority to the '945 provisional patent application. The '604 application issued as U.S. Patent No. 6,150,408 ('408). The '408 patent relates to particular bioflavonoids isolated from cherries.

There are no interferences pending.

(3) Status of Claims

Claims 1, 3, 4, 5, 6, 15, 16, 17, 18, 27, 28, 29, 30, and 34 are pending. No claims have been allowed.

(4) Status of Amendments

An Amendment After Final was filed May 20, 2003. The amendment was not entered.

(5) Summary of Invention

The applicants' invention provides a method for inhibiting cyclooxygenase enzymes and inflammation in a mammal using compositions comprising cyanidins and anthocyanins isolated from cherries.

In particular, as set forth in Claim 1, the

applicants' provide a method for inhibiting cyclooxygenase or prostaglandin H synthase enzymes (Specification: page 5, lines 13-15) which comprises providing a mixture of cyanidin and an anthocyanin which is hydrolyzable to cyanidin (Specification: pages 12-14; page 15, lines 2-5 and 16-18), so that the cyanidin and anthocyanin inhibit the enzymes (Specification: page 15, lines 2-11; Example 4, Figures 7 and 8).

In a further embodiment of the above method as set forth in Claims 3 and 4, the method is performed *in vitro* (Specification: page 6, lines 11-12) or *in vivo* (Specification: page 6, lines 9-11).

In a further still embodiment of the above method as set forth in Claims 5 or 6, the mixture is from a tart cherry or from a sweet cherry (Specification: page 8, lines 19-20).

In a further still embodiment of the above method as set forth in Claim 15, the mixture is contained in a composition which comprises a dried mixture of bioflavonoids and phenolics from cherries and a food grade carrier (Specification: page 10, lines 29-31; page 11, lines 3-5).

In a further still embodiment of the above method as set forth in Claim 16, the carrier is dried

cherry pulp (Specification: page 10, line 29).

In a further still embodiment of the above method as set forth in Claim 17, the ratio of dried mixture to carrier is between about 0.1 to 100 and 100 to 0.1 (Specification: sentence bridging pages 10-11).

In a further still embodiment of the above method as set forth in Claim 18, the mixture is incorporated into a food (Specification: page 10, lines 26-34).

The applicants further provide in Claim 27 a method for inhibiting inflammation in a mammal (Specification: page 5, lines 23-27) which comprises administering to the mammal a mixture of cyanidin and an anthocyanin which is hydrolyzable to cyanidin (Specification: pages 12-14; page 15, lines 2-5 and 16-18) so that the mixture inhibits the inflammation.

In a further embodiment of the above method as set forth in Claim 28 or 29, the mixture is from a tart cherry or a sweet cherry (Specification: page 8, lines 19-20).

In a further still embodiment of the above method as set forth in Claim 27, the mammal is human (Specification: page 6, lines 10-11).

Further still of the above method as set forth

in Claim 34, the anthocyanidins are selected from the group consisting of cyanidin-3-glucosylrutinoside, cyanidin-3-rutinoside, or cyanidin-3-glucoside, and mixtures thereof (Specification: Figure 1; page 3, lines 3-6).

(6) Issues

(A) Claims 1, 3 to 6, 15 to 18, 27 to 30, and 34 were rejected under 35 U.S.C. § 112, first paragraph, as containing new matter.

In a preliminary amendment submitted with the application, Claim 1 was amended to call for a method that uses cyanidin and Claim 27 was introduced to call for a method that used at least cyanidin. In Paper No. 7, Claims 1 and 27 were amended to call for a mixture of cyanidin and an anthocyanin. The rejection states that the mixture of cyanidin and an anthocyanin added by the amendment cannot be found in the specification; therefore, it is not enabled by the specification and thus, it is new matter.

(B) Claims 1, 3 to 6, 27 to 30, and 34 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lietti et al. (GB 1,598,294) in view of Wurm et al. (1982).

The rejection states that because Lietti teaches that anthocyanins and specifically cyanidin possess anti-inflammatory activities and Wurm teaches that "all flavonoids . . . are prostaglandin synthase (PGS) inhibitors . . .," it would have been *prima facie* obvious to one of ordinary skill in the art to combine anthocyanins and cyanidin into a mixture for inhibiting prostaglandin synthesis and/or cyclooxygenase activity.

(C) Claims 1, 3 to 6, 15 to 18, 27 to 30, and 34 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lietti et al. (GB 1,598,294) in view of Wurm et al. (1982) and further in view of Heckert et al. (US 5,516,535).

The rejection states that it would have been obvious for one of ordinary skill in the art "to add the anthocyanidin/cyanidin mixture back into dried berry pulp or fresh berry pulp because it was routine in the art to mix extracts obtained from fruit back into the pulp as disclosed by Heckert et al., in order to create a nutritional composition attractive to the consumer."

(7) Grouping of Claims

For purposes of this appeal, the claims have been separated into the following patentably separate

groups.

Group I consists of Claims 1, 3, and 4 which relate to a method for inhibiting cyclooxygenase or prostaglandin synthase enzymes with a mixture of cyanidin and an anthocyanin, which is hydrolyzable to cyanidin. Claims 1, 3, and 4 stand or fall together.

Group II consists of Claims 5, 6, 15, 17, and 18, which relate to a method for inhibiting cyclooxygenase or prostaglandin synthase enzymes with a mixture of cyanidin and an anthocyanin, which is hydrolyzable to cyanidin, wherein the mixture is from cherries. Claims 5, 6, 15, 17, and 18 stand or fall together.

Group III consists of Claim 16, which relates to a method for inhibiting cyclooxygenase or prostaglandin synthase enzymes with a mixture of cyanidin and an anthocyanin, which is hydrolyzable to cyanidin, wherein the mixture is mixed with dried cherry pulp. Claim 16 stands or falls on its own.

Group IV consists of Claims 27 and 30 relate to a methods for inhibiting inflammation with a mixture of cyanidin and an anthocyanin, which is hydrolyzable to cyanidin. Claims 27 and 30 stand or fall together.

Group V consists of Claims 28 and 29 which

relate to a method for inhibiting cyclooxygenase or prostaglandin synthase enzymes with a mixture of cyanidin and an anthocyanin, which is hydrolyzable to cyanidin, from cherries. Claims 28 or 29 stand or fall together.

Group VI consists of Claim 34, which relates to a method for inhibiting inflammation with a mixture of cyanidin and an anthocyanin, which is hydrolyzable to cyanidin, selected from the group consisting of cyanidin-3-glucosylrutinoside, cyanidin-3-rutinoside, or cyanidin-3-glucoside, and mixtures thereof. Claim 34 stands or falls on its own.

(8) Argument

(A) Claims 1, 3 to 6, 15 to 18, 27 to 30, and 34 rejected under 35 U.S.C. § 112, first paragraph.

The applicants are claiming the combination of an anthocyanin and cyanidin to reduce inflammation or inhibit the COX enzymes. The application is believed to be sufficient to support this particular combination for both claimed purposes.

While providing an example for each and every combination can be helpful, it is not necessary to do so. As stated by the US Court of Customs and Patent

Appeals, in *In re Hogan and Banks*, 194 USPQ 527, 539 (CCPA 1977), "[t]his court has held that claimed subject matter need not be described *in haec verba* in the application to satisfy the written-description-of-the-invention requirement." (citing *In re Smith*, 178 USPQ 620, 624 (CCPA 1973)) In *In re Hogan and Banks*, the applicants' claim which was directed to a homopolymer having a melting point in the range of 390° to 425° F had been rejected by the Examiner as new matter. The CCPA reversed this new matter rejection on the basis that appellants taught that they had "'produced crystalline polymers of 4-methyl-1-pentene which have melting points in the range of 390 to 425° F'" and that "one skilled in the art reading this statement would reasonably conclude that 'polymers of 4-methyl-1-pentene' describes homopolymers [] of 4-methyl-1-pentene because that is the 'necessary and only reasonable construction' to be given this statement." (citing *Vogel v. Jones*, 486 F.2d 1068, 1075 (CCPA 1973); *Binstead v. Littmann*, 242 F.2d 766, 770, 44 CCPA 839, 844 (CCPA 1957)). Therefore, even though the appellants' specification did not include a single sentence that taught the combination of a homopolymer and a specific melting point, the CCPA found that this combination could be inferred and was,

therefore, not new matter.

In the present application, it is not even necessary to make any inferences to arrive at the claimed combination. The specification teaches that the "mixture of anthocyanins, bioflavonoids, and phenolics can be tableted and used as a natural nutraceutical, phytoceutical, or dietary supplement." (Specification: page 8, lines 27-30) This mixture is again taught in original claim 15. Since "mixture" is not limited to requiring at least two of the general types of compounds, it follows that the mixture could be comprised of two or more different types of anthocyanins or two or more different types of bioflavonoids. Moreover, since anthocyanin is clearly described in the instant specification as including cyanidin within the broad category of anthocyanin, (Specification: page 5, line 37 to page 6, line 3) the only logical way to claim this combination is to use the terms "anthocyanin" for describing the glycosolated forms of this general category of compounds and cyanidin for the aglycone form of this general category.

In view of the above, applicants believe that the § 112 new matter rejection is incorrect and should be withdrawn.

(B) Claims 1, 3 to 6, 27 to 30, and 34 rejected under 35 U.S.C. § 103(a) as being unpatentable over Lietti in view of Wurm.

The applicants disagree that Lietti and Wurm would have rendered the applicants' claimed invention *prima facie* obvious to one of ordinary skill in the art.

Wurm states that all flavonoids . . . are prostaglandin synthesis (PGS) inhibitors if they have a pyrrol-catechol structure in at least one of their two aromatic rings (Wurm Eng. trans.: para. 1). Flavonoids comprise two aromatic rings joined together by 3 carbon residues thus, cyanidins, anthocyanins, and anthocyanidins are all flavonoids. Cyanidin, anthocyanidins, and anthocyanins all have a pyrrol-catechol structure in their B rings. Wurm also teaches that most bioflavonoids are resorbed poorly and are quickly decomposed by the intestinal flora and any which might get resorbed are decomposed in the liver (Wurm Eng. trans.: page 14, last paragraph). One of ordinary skill in the art might conclude from Wurm that orally administering a composition comprising cyanidins and anthocyanins would be an ineffective way to provide the bioflavonoids. Furthermore, with respect to Claims 15 to 16, which do recite a composition comprising

flavonoids, Wurm does not appear to suggest that flavonoids be mixed with cyanidin and an anthocyanin, which is hydrolyzable to cyanidin, to produce a composition for inhibiting cyclooxygenases or prostaglandin H synthase enzymes.

While Lietti discloses that cyanidins (referred to as anthocyanidines in Lietti) have an anti-inflammatory activity, Lietti does not disclose that cyanidins have any effect on cyclooxygenase or prostaglandin H synthase enzymes. The compositions disclosed in Lietti consist of cyanidins prepared by hydrolyzing anthocyanins isolated from the fruits of the bilberry (similar to a blueberry), vine (includes grapes), elder, currant, bramble (includes blackberry), or raspberry to make cyanidins and then admixing the cyanidins with pharmaceutically acceptable excipients to use for inhibiting inflammation. Lietti does not disclose that cyanidins or anthocyanidins can be isolated from cherries as taught by the applicants.

The applicants teach that anthocyanins are hydrolyzed in the gut to cyanidins (page 15, lines 16-18) which would make compositions for inhibiting cyclooxygenases or prostaglandin H synthase enzymes or inflammation that comprise anthocyanins particularly

useful when orally administered to a mammal. Lietti does not teach that anthocyanin is hydrolyzed in the gut to cyanidin. Therefore, in view of Lietti, one of ordinary skill in the art would not have been motivated to mix cyanidin with an anthocyanin, which is hydrolyzable to cyanidin, to provide a mixture for inhibiting inflammation as set forth in Claims 27 to 30 or for inhibiting cyclooxygenase or prostaglandin H synthase enzymes as set forth in Claims 1 and 3 to 6 or that the mixture be included in a food as set forth in Claim 18.

Furthermore, Lietti neither discloses a mixture comprising the particular anthocyanins of Claim 34 nor suggests as set forth in Claims 15 to 17 that flavonoids be mixed with cyanidin and an anthocyanin, which is hydrolyzable to cyanidin, in a food grade carrier to provide a composition for inhibiting cyclooxygenases or prostaglandin H synthase enzymes.

While neither prior art reference on its own would have rendered the applicants' invention *prima facie* obvious, the combination of prior art references also would not have rendered the applicants' claimed invention *prima facie* obvious. M.P.E.P. § 706.02(j) sets forth the criteria that must shown to establish

that a claimed invention is *prima facie* obvious in view of a combination of prior art references. To establish *prima facie* obviousness, it must be shown that (1) there is some suggestion or motivation, either in the prior art references or the general knowledge of one of ordinary skill in the art to combine the reference teachings, (2) there is a reasonable expectation of success if the teachings of the prior art references were combined, and (3) the combined prior art references must teach or suggest all of the claim limitations. It is particularly important to show that there is some reason why one of ordinary skill in the art, with no knowledge of the claimed invention, would have selected the particular prior art references and combined them to render the claimed invention obvious. The case law has repeatedly insisted on such a showing (See In re Sang Su Lee, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002), for a brief review of the case law).

In the present case, one of ordinary skill in the art, in the absence of knowledge of the applicants' invention, would have had no motivation to combine Wurm and Lietti for the purpose of producing a treatment for inflammation which would comprise a mixture of cyanidin and an anthocyanin, which is hydrolyzable to cyanidin.

As stated above, Wurm is limited solely to the inhibitory effect of particular flavonoids on cyclooxygenase and prostaglandin H synthase enzymes and Lietti is limited solely to the use of cyanidin for inhibiting inflammation. While one of ordinary skill in the art would have known that cyclooxygenase and prostaglandin H synthase enzymes have a role in inflammation and inhibiting the enzymes will inhibit many forms of inflammation, the artisan in view of Wurm and Lietti would not have considered treating inflammation with a mixture of cyanidin and an anthocyanin based on the disclosures of the prior art. At best, one of ordinary skill in the art might have been motivated to treat inflammation with a mixture of cyanidin and particular flavonoids. However, such a combination would not have suggested all of the claim limitations of the applicants' invention, i.e., a method for inhibiting cyclooxygenase or prostaglandin H synthase enzymes comprising a mixture of cyanidin and an anthocyanin, which is hydrolyzable to cyanidin, (Claims 1, 3, 4 to 6), particularly, a method wherein the mixture further includes bioflavonoids and phenolics from cherries in a food grade carrier (Claims 15 to 17) or a food (Claim 18), or a method for inhibiting

inflammation comprising a mixture of cyanidin and an anthocyanin, which is hydrolyzable to cyanidin (Claims 27, 28, 29, and 30), particularly, a method wherein the anthocyanin is selected from the group consisting of cyanidin-3-glucosylrutinoside, cyanidin-3-rutinoside, or cyanidin-3-glucoside, and mixtures thereof (Claim 34).

As stated above, the combination of prior art references is silent as to the utility of any composition comprising an anthocyanin for inhibiting cyclooxygenases or prostaglandin H synthase enzymes or inflammation. The combination of prior art references contains no hint or suggestion that anthocyanin is hydrolyzed in the gut to cyanidin. The only utility for anthocyanin discernable from the prior art is its use as a source for making cyanidin *in vitro*. Therefore, the combination of prior art references would not have suggested to one of ordinary skill in the art to use a mixture of cyanidin and an anthocyanin to inhibit cyclooxygenase or prostaglandin H synthase enzymes or inflammation.

Furthermore, while the Lietti states that fruits contain glycosides of cyanidins (anthocyanins), Lietti does not suggest whether the fruits contain both anthocyanins and cyanidins. Therefore, in view of the

combination of prior art references, one of ordinary skill in the art might not have known that cherries contain both cyanidins and anthocyanins of which both can be used in a composition for inhibiting cyclooxygenases or prostaglandin H synthase enzymes (Claims 1, 3, 4 to 6, and 18) and which can be used for treating inflammation (Claims 27 to 30). In particular, one of ordinary skill in the art would not have known that a mixture of cyanidin and the particular anthocyanins of Claim 34 could be used for treating inflammation.

While Lietti discloses compositions comprising cyanidin which can be administered orally, the form of the cyanidin-containing compositions is that of tablets, capsules, solutions, or suspensions. The combination of prior art references does not suggest that the cyanidin-containing compositions comprise a food grade carrier or be a component of a food. Therefore, the combination of prior art references would not have suggested to one of ordinary skill in the art that the applicants' claimed mixture of cyanidin and an anthocyanin be a component of a food as set forth in Claim 18, or as a component of a food grade carrier as set forth in Claims 15 to 17.

Furthermore, Wurm states on page 14 of the English translation that most bioflavonoids are resorbed poorly and are quickly decomposed by the intestinal flora. In light of Wurm, one of ordinary skill in the art might conclude that orally administering a composition comprising bioflavonoids would be an ineffective way to provide the bioflavonoids. Therefore, the combination of prior art references would not have suggested to one of ordinary skill in the art the applicants' claimed mixture of cyanidin and an anthocyanin further comprising a dried mixture of bioflavonoids and phenolics from cherries and a food grade carrier as set forth in Claims 15 to 17.

In light of the above, the combination of prior art references does not suggest to one of ordinary skill in the art the desirability of the applicants' claimed invention. Because the prior art references relate to either cyanidins (See Lietti) or bioflavonoids (See Wurm), and the combination of prior art references would not have suggested the applicants' claimed invention comprising at a minimum cyanidin and an anthocyanin, one of ordinary skill in the art would not have been motivated to select the prior art references and combine them for the purpose of providing the

applicants' claimed invention.

Therefore, Claims 1, 3 to 6, 27 to 30, and 34 would not have been *prima facie* obvious in view of the combination of prior art references. Reversal of the rejection is requested.

(C) Claims 1, 3 to 6, 15 to 18, 27 to 30, and 34 rejected under 35 U.S.C. § 103(a) as being unpatentable over Lietti in view of Wurm further in view of Heckert.

The above argument against Wurm and Liette applies to this rejection as well. The addition of Heckert to the rejection is not believed to render Claims 1, 3-6, 15-18, 27-30, and 34 *prima facie* obvious.

With respect to Claims 1, 3-6, 27-30, and 34, Heckert's practice of adding pulp to its beverage to provide fiber to the beverage is believed to be of no relevance as to whether the claims are *prima facie* obvious over Wurm in view of Liette. Because Claims 1, 3-6, 27-30, and 34 are not *prima facie* obvious over Wurm and Liette, the claims are clearly not *prima facie* obvious over Wurm and Liette further in view of Heckert.

Claims 15-18 are not believed to be *prima facie* obvious over Wurm and Liette further in view of

Heckert.

Heckert discloses beverages for providing bioavailable  $\beta$ -carotene which in particular embodiments can be fiber-supplemented. Sources of fiber include pulp such as orange pulp. While the beverages can contain fruit juice, the fruit juice is not a significant component of the beverage. It is added to the beverage for its flavor and not its nutritional value. In contrast, the cyanidins and anthocyanin hydrolyzable to cyanidin are significant components of the composition. Heckert does not teach or suggest making a dried mixture of cyanidins and an anthocyanin hydrolyzable to cyanidin combined with the dried pulp of cherries. Therefore, there is nothing in Heckert which would have suggested to a person of ordinary skill in the art to make a composition which contained cyanidins and an anthocyanin hydrolyzable to cyanidin isolated from cherries and combined with the dried pulp of the cherries from which they had been obtained.

In light of the above, Claims 1, 3-6, 15-18, 27-30, and 34 are believed to be patentable over Wurm and Liette further in view of Heckert.

(9) Conclusion

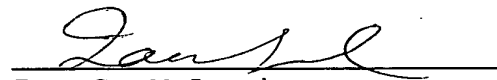
MSU 4.1-541  
Appl. No. 09/761,143  
June 25, 2003  
Appeal Brief

Claims 1, 3 to 6, 15 to 18, 27 to 30, and 34  
comply with the requirements of 35 U.S.C. § 112, first  
paragraph.

Claims 1, 3 to 6, 15 to 18, and 27 to 34 are  
not *prima facie* obvious in view of the prior art.

Reversal of the above rejections and remand to  
the Examiner for allowance of the application is  
requested.

Respectfully,



Ian C. McLeod  
Registration No. 20,931

McLeod & Moyne, P.C.  
2190 Commons Parkway  
Okemos, MI 48864

(517) 347-4100  
Fax: (517) 347-4103

**APPENDIX A**

-1-

A method for inhibiting cyclooxygenase or prostaglandin H synthase enzymes which comprises:

providing a mixture of cyanidin and ~~an~~  
anthocyanin<sup>one</sup> which ~~is~~ hydrolyzable to cyanidin so that  
5 the cyanidin and anthocyanin inhibit the enzymes.

-3-

The method of Claim 1 wherein the method is *in vitro*.

-4-

The method of Claim 1 wherein the method is *in vivo*.

-5-

The method of Claim 1 wherein the mixture is from a tart cherry.

-6-

The method of Claim 1 wherein the mixture is from a sweet cherry.

-1-

-15-

The method of Claim 1 wherein the mixture of cyanidin and anthocyanin is contained in a composition which comprises a dried mixture of bioflavonoids and phenolics from the cherries and a food grade carrier.

-16-

The method of Claim 15 wherein the carrier is dried cherry pulp.

-17-

The method of Claim 15 wherein a ratio of dried mixture to carrier is between about 0.1 to 100 and 100 to 0.1.

-18-

The method of Claim 1 wherein the compound is incorporated into a food.

-27-

A method for inhibiting inflammation in a mammal which comprises:

administering to the mammal a mixture of cyanidin and an anthocyanin which is hydrolyzable to cyanidin so that the mixture inhibits the inflammation.

-28-

The method of Claim 27 wherein the mixture is from a tart cherry.

-29-

The method of Claim 27 wherein the mixture is from a sweet cherry.

-30-

The method of Claim 27 wherein the mammal is human.

-34-

The method of Claim 27 wherein the anthocyanin is selected from the group consisting of cyanidin-3-glucosylrutinoside, cyanidin-3-rutinoside, or cyanidin-3-glucoside, and mixtures thereof.

APPENDIX B

